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(54) **LEVER ACTUATOR**

BESTÄTIGUNGSHEBEL

DISPOSITIF D'ACTIONNEMENT DE LEVIER

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EP 0 885 164 B1

Description

[0001] The invention relates to an actuator according to the precharacterizing part of claim 1.

[0002] This invention generally relates to a lever actuator that is useful in a variety of applications. One particular application for a lever actuator designed in accordance with this invention is for use in adjusting a back support within an automobile seatback, for example. A lever actuator designed in accordance with this invention provides a relatively lightweight, inexpensive and compact design for such a device.

[0003] A variety of rotary and linear actuators are used in applications requiring an adjustment of tension upon a cable, for example. Such adjustment mechanisms typically include complex gearing mechanisms and electromechanical motors. Such devices have the drawbacks of being relatively expensive, complex and susceptible to mechanical failure. Disadvantages associated with such devices include the need for frequent repair and prohibitively expensive production costs.

[0004] US-A-5 109 963 shows a clutch assembly for a four way manual seat adjuster. The clutch assembly includes a stationary cylindrical housing in which a pair of coil clutch springs are disposed. The springs are biased to expand radially outwardly into frictional engagement with the housing whereby rotation of the springs is prevented. A release handle is provided to selectively release one spring or the other enabling rotation in one direction.

[0005] This invention provides a lever actuator that overcomes the shortcomings and drawbacks associated with prior devices and provides the advantageous features that are described below.

[0006] According to the invention, this is achieved by the features in the characterizing part of claim 1. Advantageous further embodiments are described in the subclaims.

[0007] The invention can be described in the following terms. This invention provides an actuator for use in applications requiring a rotational adjustment such as adjusting the length of or tension on a cable. An actuator designed in accordance with this invention includes a housing and a shaft that is fixedly mounted within the housing. A driver is rotatably disposed about the shaft. A first clutch member, which is rotationally fixedly coupled to the driver, is received about and engages a portion of the shaft such that the first clutch member and the driver are free to rotate in a first direction about the shaft but not in a second direction opposite to the first direction. A second clutch member is positioned to engage the first clutch member when the second clutch member is rotated in a second direction to thereby disengage the first clutch member from the shaft such that the driver is rotated in the second direction. The second clutch member is also positioned to engage the driver directly when the second clutch member is rotated in the first direction to thereby rotate the driver in the first direction.

[0008] In the most preferred embodiment of this invention, the clutch members are clutch springs. A further enhancement added to the most preferred embodiment includes a centering spring, which biases the driver into a neutral position. A handle is preferably coupled to the driver that can be rotationally moved from the neutral position in order to cause the second clutch member to move the driver in the first or second directions. In the most preferred embodiment, when the handle and driver return from an adjusted position to the neutral position, the driver and first clutch member remain rotationally fixed in the adjusted position about the shaft.

[0009] Further advantages and features of this invention will become apparent to those skilled in the art from the following detailed description of the preferred embodiments.

[0010] Figure 1 is an exploded, perspective view of a lever actuator assembly designed in accordance with this invention.

[0011] Figure 2 is a partial cross-sectional view illustrating portions of the embodiment of Figure 1.

[0012] Figure 3 is a perspective view of the assembly of Figure 1 illustrated in an assembled form.

[0013] Figure 4 is a cross-sectional view of the assembled embodiment of Figure 3.

[0014] Figures 5A and 5B are partial cross-sectional views illustrating a feature of the most preferred embodiment of this invention.

[0015] Figure 6 is a perspective view of an assembled embodiment of this invention as would be used in an application for adjusting the length of a cable.

[0016] Figure 7 is a side planar view of the embodiment of Figure 6, illustrating an adjustment provided by that embodiment.

[0017] Figure 1 is an exploded, perspective view of a lever actuator assembly 10 as designed in accordance with this invention. Assembly 10 includes housing 12, which can be fixedly mounted to a portion of an automobile seat for applications where lever actuator 10 will be used to adjust a back support within the seat, for example. Housing 12 has a cable access slot 13 with enlarged openings at each end. Trip spring 14 is a compression spring received within annular groove 16 inside housing 12. Trip spring 14 is maintained in a compressed condition by one or more stake pins (not shown) or other engagement surfaces within groove 16. Alternatively, trip spring 14 could be a tension spring disposed in a groove on an outside of the housing. Yet another alternative employs a pair of tension springs in associated grooves on the outside of the housing with an engagement member (not shown) connecting them. Driver 18 is received within housing 12 such that driver 18 rotates relative to housing 12. Driver 18 has a portion referred to as a cam winder in this specification, as it has a cable winding groove 21 with a cam shaped profile. Winding a cable 56 around the cam winder increases the stress within cable 56 by subjecting it to bending.

Bending stress is inversely proportional to the bending radius, decreasing with an increase in radius. The cam shape is therefore selected to provide substantially constant maximum cable stress for the entire range of displacement. Constant stress makes it possible to optimize the size of the cable without risking premature fatigue failure of the cable 56. One embodiment shown has a constant diameter profile groove 21. Cable winding groove 21 is aligned with cable access slot 13 for receiving the cable 56, best seen in Figure 7. Clutch member 20, which is a clutch spring in the illustrated embodiment, is received within a central bore in driver 18. Spring tab 22 on clutch spring 20 abuts against step 24 (as illustrated in Figure 2) within driver 18 such that clutch member 20 and driver 18 are rotationally fixed relative to each other.

[0018] Shaft 26 is fixedly mounted within housing 12 such that clutch member 20 and driver 18 are received about shaft 26. Spacer 28 on shaft 26 enables clutch member 20 to rotate freely relative to shaft 26 when clutch member 30 engages clutch member 20. Engagement occurs when, as shown in Figure 6, handle 54 is rotated in the direction of arrow 59 from a neutral position. Spacer 28 is slidably disposed on shaft 26 in the area where clutch member 30 collapses and engages. Clutch member 30 is also a clutch spring. Adapter 32 has a slot defined on a surface that faces clutch member 30 when actuator 10 is assembled. The slot (not specifically shown in the drawing) cooperates with spring tab 34 on clutch member 30 such that rotation of adapter 32 causes a simultaneous rotation of clutch member 30. Spring tab 36 on clutch member 30 is received through slot 37 in housing 12 and, when the assembly is in a completely assembled condition, tab 36 is positioned to move arcuately within annular groove 16 in housing 12. If the exterior groove and tension spring are employed as an alternative to the interior groove 16 and compression spring 14, then the tab 36 is positioned to engage the end of the tension spring. Slot 38 in driver 18 is defined by a separate end portion 35 of driver 18 with an engagement tooth 33 received by a complementary notch in a main body portion. Slot 38 receives spring tab 36 of clutch 30, with clutch 30 being disposed in end portion 35.

[0019] Figures 2 and 3 illustrate actuator assembly 10 in an assembled condition. Figure 3 illustrates, in perspective view, the outside of the assembled actuator 10. Figure 4 illustrates, in cross-sectional view, the coaxial alignment and longitudinal positioning of the various components as described above.

[0020] Although the various components of actuator assembly 10 have been described above, the most preferred method of assembling actuator 10 is described as follows.

[0021] For simplicity in description, rotations will be described in this specification as being clockwise or counter-clockwise. Arrow 59 of Figure 6 points in the counter-clockwise direction. As will be appreciated by one skilled in the art, however, the direction of rotation could be reversed without departing from the scope of this invention.

[0022] Clutch member 20 is mounted upon hub 39 in driver 18 such that clutch member 20 cannot rotate counter-clockwise relative to driver 18. Step 24 engages spring tab 22, as described above, in order to keep clutch member 20 from rotating clockwise relative to driver 18. An interference fit is preferably provided between the interior of clutch member 20 and the exterior, or outer diameter, of hub 39. The interference fit between clutch member 20 and hub 39 keeps clutch member 20 from rotating relative to driver 18. In this manner, the clutch member 20 is rigidly, rotationally fixed to driver 18. Providing a rotationally fixed alignment between clutch member 20 and driver 18 can be accomplished in a variety of ways. For example, clutch member 20 could be placed within a pocket defined in driver 18 and spring tab 22 could fit within a cooperating slot, which would serve to keep clutch member 20 from rotating in either a clockwise or counter-clockwise direction.

[0023] Next, driver 18 is loaded onto shaft 26. An interference fit is provided between clutch member 20 and shaft 26. Because of the direction of the windings of clutch spring 20, driver 18 can rotate clockwise about shaft 26, but clutch spring 20 prevents driver 18 from rotating counter-clockwise relative to shaft 26. In an application where lever actuator 10 is utilized to wind a cable, for example to adjust a tension on the cable, clutch member 20 allows a cable to be wrapped around a spool portion defined on driver 18 by groove 21 in order to increase the tension on the cable outside of housing 12.

[0024] Engagement of clutch member 30 to adapter 32 is provided by placing spring tab 34 in the cooperating slot defined on adapter 32. Clutch member 30 is then loaded, with an interference fit, within the interior bore of driver 18. These components are then loaded into housing 12 and the completed actuator assembly appears as is shown in Figures 3 and 4.

[0025] Figures 5A and 5B show a further enhancement in the most preferred embodiment of actuator assembly 10. Centering spring 40 is preferably provided for those applications where a centering of adapter 32 is desired. Centering spring 40 includes spring ends 42 and 44, which are received within slots or pockets 46 and 48, respectively. When the assembly is loaded into housing 12, spring end 42 is resting against shelf 52, which serves as an abutment surface relative to spring end 42. Similarly, spring end 44 is abutting against shelf 50 within slot 48. The contact between a spring end and the respective abutment surfaces places the adapter 32 into a centered, neutral position. This is illustrated in Figure 5B.

[0026] Figure 5A illustrates when adapter 32 is rotated in a clockwise direction. Spring end 44 remains in contact with abutment surface 50 in housing 12 while end 42 is rotated clockwise thereby torsionally compressing centering spring 40. This compression of

centering spring 40 biases adapter 32 in a counter-clockwise position such that is it returned to the neutral position when the rotating force is released.

[0027] Similarly, when adapter 32 is rotated in a counter-clockwise direction, spring end 42 remains in the position illustrated in Figure 5A at 42' while end 44 rotates upward in a counter-clockwise position to the position illustrated in phantom at 44'. Therefore, this counter-clockwise rotation torsionally compresses spring 40, which in turn biases adapter 32 back toward the neutral position (as illustrated in Figure 5B). The advantage of providing such a centering spring in an embodiment of this invention is described in more detail below with reference to Figures 6 and 7.

[0028] Figure 6 illustrates, in perspective view, a completed actuator assembly as used in an application for adjusting the relative length of or the tension on a cable. Handle 54 is coupled with adapter 32 such that movement of handle 54 causes a rotating movement of adapter 32. Cable 56 is received within housing 12 through access slot 13 in a manner that allows a length of cable 56 to be drawn within housing 12 and wrapped around a spool portion of cam winder 18. As shown in Figure 7, a metal slug forming cable end 57 is received by notch 58 in cable winding groove 21.

[0029] When handle 54 is rotated counter-clockwise from the neutral position shown in Figure 6, spring end 36 of clutch member 30 contacts trip spring 14, causing clutch member 30 to collapse onto clutch member 20. When clutch member 30 collapses onto clutch member 20, handle 54 is effectively engaged to the end of clutch member 20. Therefore, any counter-clockwise rotation of handle 54 causes clutch member 20 to slip counter-clockwise relative to shaft 26. Spacer 28 sustains the collapsing load from clutch member 30 which is transferred through clutch member 20, thereby preventing clutch member 20 from engaging shaft 26. Spacer 28 rotates freely with clutch member 20 relative to shaft 26. Spring tab 22, acting against step 24, rotates driver 18 in a counter-clockwise direction, which would correspond to lengthening cable 56. Returning clockwise movement of handle 54 and adapter 32 to the neutral position of Figure 6 causes clutch member 30 to slip relative to clutch member 20 because of continuing contact between tab 36 and spring 14, thereby having no effect on the length of the cable.

[0030] The lever type handle 54 shown in Figures 6 and 7 is superior to handwheels or knobs commonly used with seat adjusters in that the lever-type handle requires little or no gripping force to displace it. Handwheel controls for seat adjusters, in contrast, typically require a considerable amount of force to operate, making them nearly useless to people with a weak grip, particularly those afflicted with arthritis, or carpal tunnel syndrome.

[0031] Referring now to Figure 7, handle 54 is illustrated in neutral position 62. When handle 54 is rotated in a clockwise direction 60 from neutral position 62 to an adjustment position illustrated in phantom at 64, the effective length of cable 56 is shortened. As can be appreciated from Figure 7, clockwise rotation of handle 54 corresponds to winding the cable 56 about the cam winder or spool portion of driver 18 as cable 56 is drawn inward within housing 12 according to direction arrow 68 and into groove 21. When handle 54 is rotated in this clockwise direction from neutral position 62, clutch member 30 expands radially outward and engages driver 18 such that handle 54 and driver 18 are moving clockwise simultaneously. Therefore, any clockwise movement of handle 54 from neutral position 62 causes driver 18 to rotate clockwise. A clockwise rotation 18 in the illustrated embodiment, results in shortening the length of cable 56 outside of housing 12.

[0032] Any counter-clockwise movement of handle 54 from adjustment position 64 back toward neutral position 62 causes clutch member 30 to slip relative to driver 18, thereby having no effect on the adjusted length of cable 56. In other words, handle 54 can be repeatedly, or cyclically moved or pumped from neutral position 62 to adjustment position 64 in order to shorten the length of cable 56 while avoiding the possibility of unwinding cable 56. In still other words, movement of handle 54 from position 62 to 64 results in winding cable 56 about a spool portion of driver 18, yet the return of handle 54 from position 64 to position 62 has no effect on the position of driver 18, and therefore, no effect on the length of cable 56 relative to housing 12.

[0033] The pumping of handle 54 to change the length of cable 56 is made possible by the arrangement and alignment of clutch members 20 and 30 within housing 12 as described above. As will be appreciated, centering spring 40 serves the purpose of always returning handle 54 to neutral position 62 from both a clockwise position and a counter-clockwise position absent any force applied to the handle by a user.

[0034] The preceding description is exemplary rather than limiting in nature. Variations and modifications of the described embodiments will become apparent to those skilled in the art. The scope of this invention is to be limited only by the appended claims.

Claims

1. An actuator (10) for use in applications requiring a rotational adjustment such as adjusting the length of or tension on a cable, including a housing (12), a shaft (26) fixedly mounted in said housing (12), and a plurality of clutch members (20, 30) for providing selective engagement, **characterized by**:

   a driver (18) rotatably disposed about said shaft (26);

   a first clutch (20) member rotationally fixedly coupled to said driver (18), said first clutch member (20) being received about and engag-

ing a portion of said shaft (26) such that said first clutch member (20) and said driver (18) are free to rotate in a first direction (60) about said shaft (26) but not in a second direction (59) opposite to said first direction (60); and
a second clutch member (30) positioned to engage said first clutch member (20) when said second clutch member (30) is rotated in said second direction (59) to thereby disengage said first clutch member (20) from said shaft (26) such that said driver (18) is rotated in said second direction, said second clutch member (30) being positioned to engage said driver (18) when said second clutch member (30) is rotated in said first direction (60) to thereby rotate said driver in said first direction (60).

2. The actuator of claim 1, wherein said second clutch member (30) is coupled to a handle (54 and 32) such that said second clutch member (30) rotates with said handle (54 and 32).

3. The actuator of claim 2, wherein said handle (54 and 32) has a neutral rotation position (62) relative to said housing (12) and wherein said handle (54 and 32) and said second clutch member (30) are rotatable from said neutral position (62), in said first and second directions, along an arcuate path of a preselected length.

4. The actuator of claim 3, wherein said second clutch member (30) engages said first clutch member (20) when said handle (54 and 32) is moved in said second direction from said neutral position (62) to an adjustment position (64) and wherein said second clutch member (30) does not engage said driver (18) when said handle (54 and 32) moves in said first direction (60) from said adjustment position (64) to said neutral position (62).

5. The actuator of claim 1, further comprising a cooperating member (28) that cooperates with said second clutch member (30) when said second clutch member (30) is rotated in said second direction (59) such that said second clutch member (30) engages said first clutch member (20) and thereby disengages said first clutch member (20) from said shaft (26) such that said driver (18) is rotated in said second direction (59).

6. The actuator of claim 3, wherein said second clutch member (30) engages said driver (18) when said handle (54 and 32) is moved in said first direction (60) from said neutral position (62) to an adjustment position (64) and wherein said second clutch member (30) does not engage said first clutch member (20) when said handle (54 and 32) moves in said second direction (59) from said adjustment position (64) to said neutral position (62).

7. The actuator of claim 3, further comprising a biasing member (14 or 40) for biasing said handle (54 and 32) into said neutral position (62).

8. The actuator of claim 7, wherein said biasing member (14) comprises a centering spring (14) that has one end that abuts against an abutment surface defined on said driver (18) when said handle (54 and 32) is rotated in one of said first or second directions and a second spring end that abuts against an abutment surface (36) defined on said handle (54 and 32) when said handle (54 and 32) is rotated in the other of said first or second directions.

9. The actuator of claim 1, wherein said first clutch (20) member comprises a clutch spring.

10. The actuator of claim 1, wherein said second clutch member (30) comprises a clutch spring.

Patentansprüche

1. Betätigungsvorrichtung (10) zur Verwendung bei Anwendungen, die eine Rotationseinstellung erfordern, wie Einstellen der Länge eines Kabels oder der Zugspannung daran, aufweisend ein Gehäuse (12), eine Welle (26), die fest in das Gehäuse (12) montiert ist, und eine Mehrzahl von Kupplungsteilen (20, 30) zum Schaffen eines selektiven Eingriffs, **gekennzeichnet durch**:

einen Treiber (18), der um die Welle (26) herum drehbar angeordnet ist;
ein erstes Kupplungsteil (20), das fest mit dem Treiber (18) gekuppelt ist, wobei das erste Kupplungsteil (20) um die Welle (26) herum aufgenommen ist und in einen Abschnitt derselben eingreift, so daß sich das erste Kupplungsteil (20) und der Treiber (18) um die Welle (26) herum in einer ersten Richtung (60), jedoch nicht in einer der ersten Richtung (60) gegenüberliegenden zweiten Richtung (59) frei drehen; und
ein zweites Kupplungsteil (30), das positioniert ist, um in das erste Kupplungsteil (20) einzugreifen, wenn das zweite Kupplungsteil (30) in die zweite Richtung (59) gedreht wird, um **dadurch** das erste Kupplungsteil (20) von der Welle (26) außer Eingriff zu bringen, so daß der Treiber (18) in die zweite Richtung gedreht wird, wobei das zweite Kupplungsteil (30) positioniert ist, um in den Treiber (18) einzugreifen, wenn das zweite Kupplungsteil (30) in die erste Richtung (60) gedreht wird, um **dadurch** den Treiber in die erste Richtung (60) zu dre-

hen.

2. Betätigungsvorrichtung nach Anspruch 1, wobei das zweite Kupplungsteil (30) mit einem Handgriff (54 und 32) derart gekuppelt ist, daß sich das zweite Kupplungsteil (30) mit dem Handgriff (54 und 32) dreht.

3. Betätigungsvorrichtung nach Anspruch 2, wobei der Handgriff (54 und 32) eine neutrale Rotationsposition (62) relativ zu dem Gehäuse (12) hat, und wobei der Handgriff (54 und 32) und das zweite Kupplungsteil (30) aus der Neutralposition (62) in die erste und zweite Richtung entlang eines bogenförmigen Pfades einer vorselektierten Länge drehbar sind.

4. Betätigungsvorrichtung nach Anspruch 3, wobei das zweite Kupplungsteil (30) in das erste Kupplungsteil (20) eingreift, wenn der Handgriff (54 und 32) in die zweite Richtung aus der Neutralposition (62) in eine Einstellposition (64) bewegt wird, und wobei das zweite Kupplungsteil (30) nicht in den Treiber (18) eingreift, wenn sich der Handgriff (54 und 032) in die erste Richtung (60) aus der Einstellposition (64) in die Neutralposition (62) bewegt.

5. Betätigungsvorrichtung nach Anspruch 1, ferner aufweisend ein Verbindungsteil (28), das mit dem zweiten Kupplungsteil (30) zusammenwirkt, wenn das zweite Kupplungsteil (30) in die zweite Richtung (59) gedreht wird, so daß das zweite Kupplungsteil (30) in das erste Kupplungsteil (20) eingreift und dadurch mit dem ersten Kupplungsteil (20) von der Welle (26) außer Eingriff ist, so daß der Treiber (18) in die zweite Richtung (59) gedreht wird.

6. Betätigungsvorrichtung nach Anspruch 3, wobei das zweite Kupplungsteil (30) in den Treiber (18) eingreift, wenn der Handgriff (54 und 32) in die erste Richtung (60) aus der 5Neutralposition (62) in eine Einstellposition (64) bewegt wird, und wobei das zweite Kupplungsteil (30) nicht in das erste Kupplungsteil (20) eingreift, wenn sich der Handgriff (54 und 32) in die zweite Richtung (59) aus der Einstellposition (64) in die Neutralposition (62) bewegt.

7. Betätigungsvorrichtung nach Anspruch 3, ferner aufweisend ein Vorspannteil (14 oder 40) zum Vorspannen des Handgriffs (54 und 32) in die Neutralposition (62).

8. Betätigungsvorrichtung nach Anspruch 7, wobei das Vorspannteil (14) eine Zentrierfeder (14) aufweist, die ein Ende, das an einer an dem Treiber (18) definierten Anlagefläche anliegt, wenn der Handgriff (54 und 32) in eine der ersten oder zweiten Richtung gedreht wird, und ein zweites Federende aufweist, das an einer an dem Handgriff (54 und 32) definierten Anlagefläche (36) anliegt, wenn der Handgriff (54 und 32) in die andere der ersten oder zweiten Richtung gedreht wird.

9. Betätigungsvorrichtung nach Anspruch 1, wobei das erste Kupplungsteil (20) eine Kupplungsfeder aufweist.

10. Betätigungsvorrichtung nach Anspruch 1, wobei das zweite Kupplungsteil (30) eine Kupplungsfeder aufweist.

Revendications

1. Dispositif d'actionnement (10) destiné à être utilisé dans des applications nécessitant un ajustement en rotation tel qu'un ajustement de la longueur ou de la tension d'un câble, constitué d'un boîtier (12), d'un arbre (26) monté de manière fixe dans ledit boîtier (12), et d'une pluralité d'éléments d'accouplement (20, 30) pour fournir un engagement sélectif, **caractérisé par** :

   un dispositif d'entraînement (18) disposé pour tourner autour dudit arbre (26) ;
   un premier élément d'accouplement (20) couplé de manière fixe sur ledit dispositif d'entraînement (18) afin de tourner, ledit premier élément d'accouplement (20) étant reçu autour de, et s'engageant sur une partie dudit arbre (26), de telle sorte que ledit premier élément d'accouplement (20) et ledit dispositif d'entraînement (18) sont libres de tourner dans un premier sens (60) autour dudit arbre (26) mais pas dans un second sens (59) opposé audit premier sens (60) ; et
   un second élément d'accouplement(30) positionné pour s'engager sur ledit premier élément d'accouplement (20) lorsque ledit second élément d'accouplement (30) tourne dans ledit second sens (59) afin de dégager ainsi ledit premier élément d'accouplement (20) dudit arbre (26), de telle sorte que ledit dispositif d'entraînement (18) tourne dans ledit second sens, ledit second élément d'accouplement (30) étant positionné afin de s'engager sur ledit dispositif d'entraînement (18) lorsque ledit second élément d'accouplement (30) tourne dans ledit premier sens (60) afin de faire tourner, ainsi, ledit dispositif d'entraînement dans ledit premier sens (60).

2. Dispositif d'actionnement selon la revendication 1, dans lequel ledit second élément d'accouplement (30) est couplé à une poignée (54 et 32) de telle

sorte que ledit second élément d'accouplement (30) tourne avec ladite poignée (54 et 32).

3. Dispositif d'actionnement selon la revendication 2, dans lequel ladite poignée (54 et 32) possède une position neutre de rotation (62) par rapport audit boîtier (12) et dans lequel ladite poignée (54 et 32) et ledit second élément d'accouplement (30) peuvent tourner à partir de ladite position neutre (62), dans lesdits premier et second sens, le long d'un trajet arqué d'une longueur prédéterminée.

4. Dispositif d'actionnement selon la revendication 3, dans lequel ledit second élément d'accouplement (30) s'engage sur ledit premier élément d'accouplement (20) lorsque ladite poignée (54 et 32) se déplace dans ledit second sens à partir de ladite position neutre (62) jusqu'à une position d'ajustement (64), et dans lequel ledit second élément d'accouplement (30) ne s'engage pas sur ledit dispositif d'entraînement (18) lorsque ladite poignée (54 et 32) se déplace dans ledit premier sens (60) à partir de ladite position d'ajustement (64) vers ladite position neutre (62).

5. Dispositif d'actionnement selon la revendication 1, comprenant en outre un élément coopérant (28) qui coopère avec ledit second élément d'accouplement (30) lorsque ledit second élément d'accouplement (30) tourne dans ledit second sens (59) de telle sorte que ledit second élément d'accouplement (30) s'engage sur ledit premier élément d'accouplement (20) et dégage ainsi ledit premier élément d'accouplement (20) dudit arbre (26) de telle sorte que ledit dispositif d'entraînement (18) tourne dans ledit second sens (59).

6. Dispositif d'actionnement selon la revendication 3, dans lequel ledit second élément d'accouplement (30) s'engage sur ledit dispositif d'entraînement (18) lorsque ladite poignée (54 et 32) se déplace dans ledit premier sens (60) à partir de ladite position neutre (62) vers une position d'ajustement (64) et dans lequel ledit second élément d'accouplement (30) ne s'engage pas sur ledit premier élément d'accouplement (20) lorsque ladite poignée (54 et 32) se déplace dans ledit second sens (59) à partir de ladite position d'ajustement (64) vers ladite position neutre (62).

7. Dispositif d'actionnement selon la revendication 3, comprenant en outre un élément de poussée (14 ou 40) permettant de pousser ladite poignée (54 et 32) dans ladite position neutre (62).

8. Dispositif d'actionnement selon la revendication 7, dans lequel ledit élément de poussée (14) comprend un ressort de centrage (14) qui possède une extrémité qui bute contre une surface de butée définie sur ledit dispositif d'entraînement (18) lorsque ladite poignée (54 et 32) tourne dans l'un desdits premier et second sens et une seconde extrémité de ressort qui bute contre une surface de butée (36) définie sur ladite poignée (54 et 32) lorsque ladite poignée (54 et 32) tourne dans l'autre desdits premier et second sens.

9. Dispositif d'actionnement selon la revendication 1, dans lequel ledit premier élément d'accouplement (20) comprend un ressort d'accouplement.

10. Dispositif d'actionnement selon la revendication 1, dans lequel ledit second élément d'accouplement (30) comprend un ressort d'accouplement.

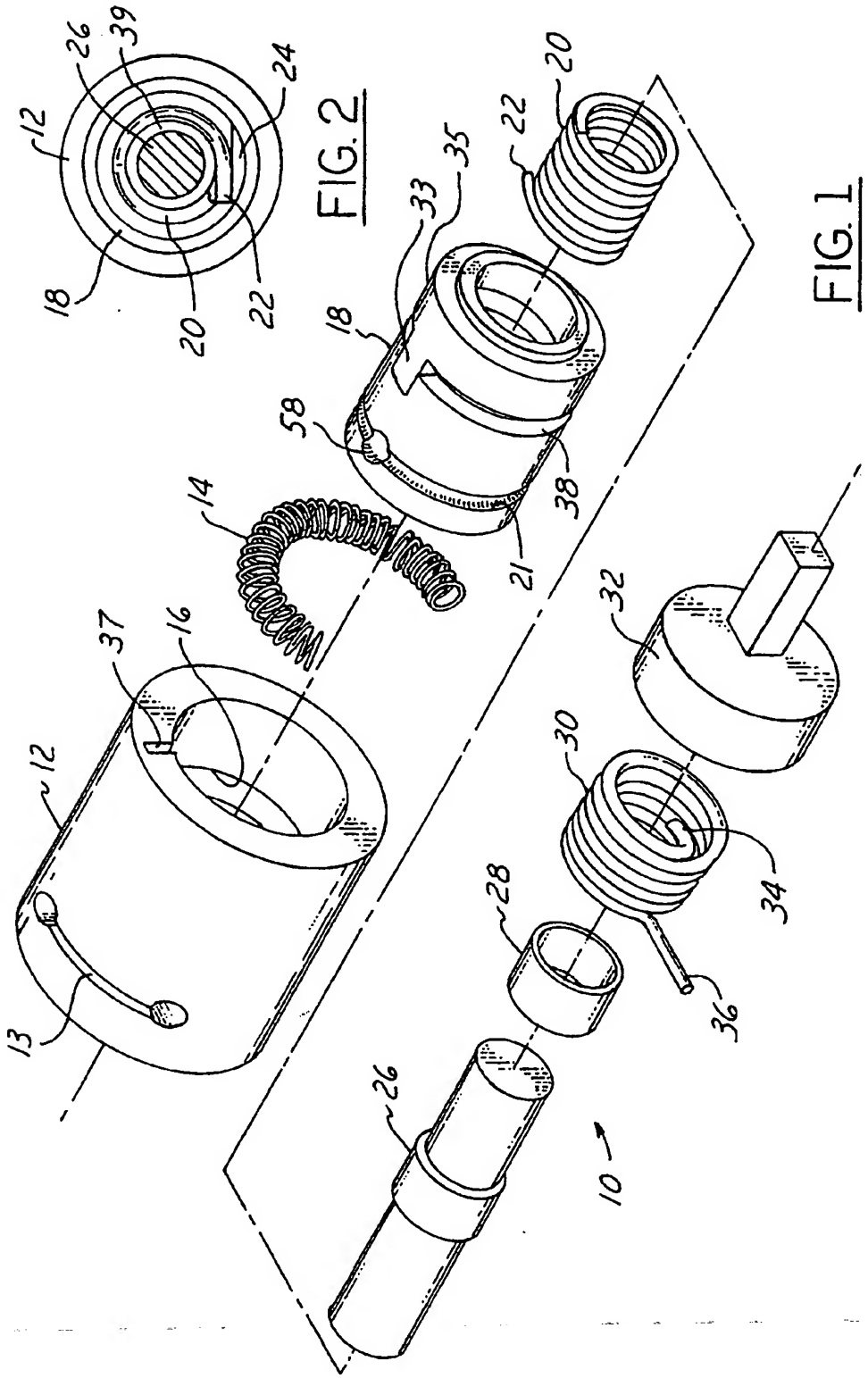
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FIG. 2
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FIG. 1

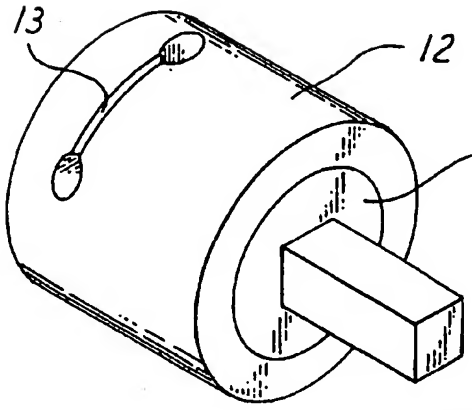

FIG. 3

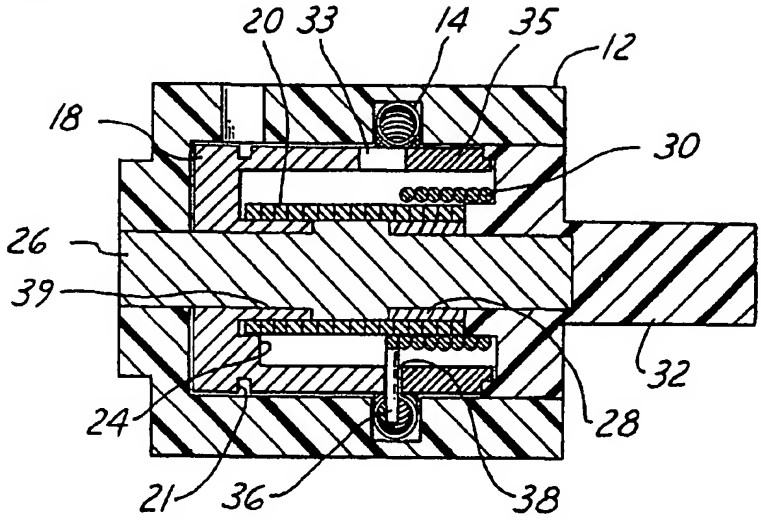

FIG. 4

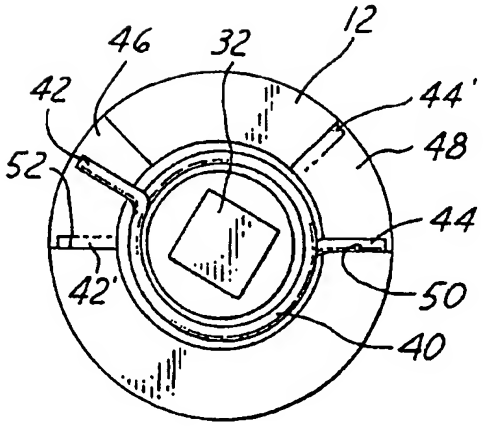

FIG. 5A

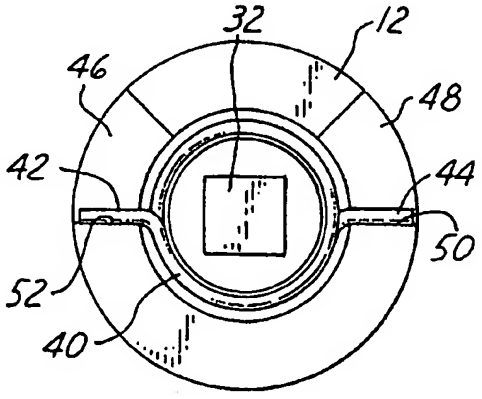

FIG. 5B

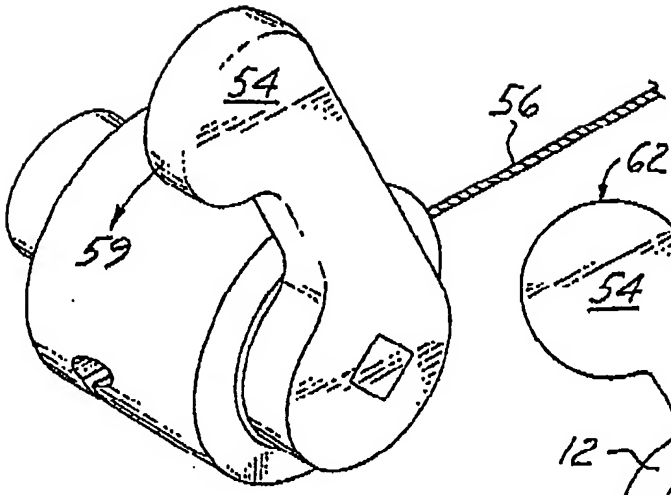

FIG. 6

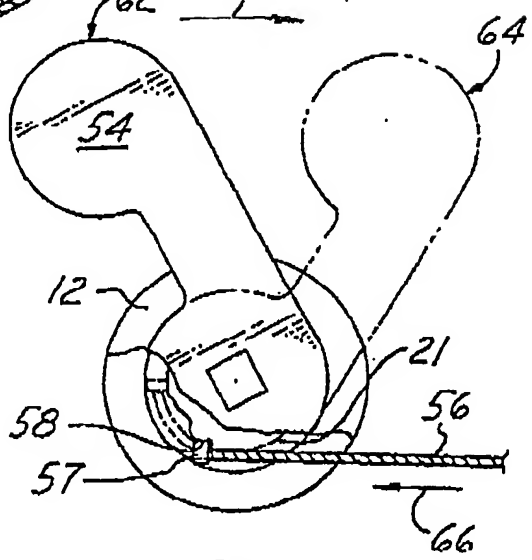

FIG. 7